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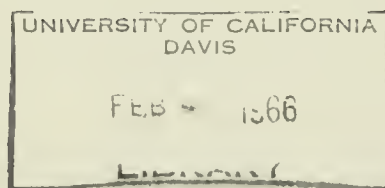
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State of California
THE RESOURCES AGENCY

Department of Water Resources

BULLETIN No. 119-20

FEASIBILITY OF SERVING
THE LITTLEROCK CREEK IRRIGATION DISTRICT
FROM THE STATE WATER PROJECT



DECEMBER 1965

HUGO FISHER
Administrator
The Resources Agency

EDMUND G. BROWN
Governor
State of California

WILLIAM E. WARNE
Director
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FOREWORD

In November 1960, the California Water Resources Development Bond Act was approved by the State's electorate, paving the way for the construction of the State Water Project. Since that time, many local water service agencies throughout the State have applied to the Department of Water Resources for consideration as potential contractors with the State for water service from the proposed facilities. Several water agencies have been organized since November 1960 expressly for the purpose of obtaining supplemental water supplies from the State facilities for the areas they represent.

Prior to executing contracts for water service with water agencies, the Department of Water Resources made studies of those agencies and the areas encompassed by them in order to determine the propriety of entering into such contracts. These studies were made with the goal of evaluating (1) each area's future demand for supplemental water supplies; (2) the legal ability of each agency in question to enter into a water supply contract with the State; (3) the engineering feasibility of providing the proposed water service; and (4) the financial ability of each agency and its constituent area to bear the financial burden necessarily imposed upon it by a water supply contract with the State.

The results of the studies made for each agency, as described above, along with significant incidental and supporting material, have been embodied in separate reports which have or will be published by the Department of Water Resources for the benefit of interested agencies and persons. This bulletin, dealing with the Littlerock Creek Irrigation District of northern Los Angeles County, is such a publication.

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State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

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CHAPTER I. INTRODUCTION

On June 22, 1963, the Littlerock Creek Irrigation District executed a contract with the State of California for water from the State Water Project. This contract was the result of agreements reached between the District and the Department of Water Resources, arising from negotiations based on data developed and presented in this report.

During the course of contract negotiations, the Littlerock Creek Irrigation District was considering the annexation of a substantial amount of land to the south and west of its original boundaries. Before the contract was signed, most of this land had been annexed by the District, and there was reason to believe that the remainder of the area would be annexed by the District in the near future. For this reason, the data developed during contract negotiations and presented in this report were compiled for the combined area of the Littlerock Creek Irrigation District and all the lands which had been under consideration for annexation at the time of contract negotiations. The combined area of these territories will be referred to in this report as the Littlerock Creek Irrigation District.

Purpose and Scope of the Report

The purpose of this report is to present the essential background data that contributed to the evaluation of the feasibility of providing supplemental water to the Littlerock Creek Irrigation District from the State Water Project. The report includes a review of the economic history of the area in which the District is located, an assessment of its recent economic development and future economic potential, a schedule of the probable costs of serving the District with water from the State Water Project, and estimates of its future water needs. The report closes with an evaluation of the

economic and financial feasibility of satisfying these needs through water service from the State Water Project.

Several years ago the Department of Water Resources conducted a general investigation of the Antelope Valley, the region in which the District is located, for Bulletin No. 78, "Investigation of Alternative Aqueduct Systems to Serve Southern California". Appendix A of that bulletin entitled "Long Range Economic Potential of the Antelope Valley-Mojave River Basin" (prepared by the management consultant firm of Booz, Allen, and Hamilton and published in January 1959), considered the economic future of the Mojave Desert portions of Los Angeles, Kern, and San Bernardino Counties, and provided a basis for projections of that area's imported water demands. Appendix D of the same bulletin, "Economic Demand for Imported Water", published in March 1960, modified the conclusions in Appendix A to bring the projections of population and water demands for the Antelope Valley-Mojave River area into conformity with studies conducted for the balance of the State of California. The present report was prepared for the purpose of presenting the results of studies which evaluate the feasibility of serving the Littlerock Creek Irrigation District from the State Water Project.

On February 13, 1964, seven months after the water supply contract with the Littlerock Creek Irrigation District was signed, the District submitted a resolution to the Department expressing a desire to exercise its option to increase its maximum annual entitlement by 300 acre-feet under Article 8 of its water supply contract. After analyzing the District's request, the Department determined that the Agency could put this additional water to beneficial use prior to 1990 and that the Agency had the financial ability to pay for the added water. A copy of this analysis is presented in Appendix A of this report. On September 28, 1964, the Agency's contract was amended to provide a total maximum annual entitlement of 2,300 acre-feet.

Description of the Service Area

The Littlerock Creek Irrigation District is located in and around the community of Littlerock on the southern edge of the Antelope Valley portion of the Mojave Desert, about 40 miles north of the City of Los Angeles. The lands of the District are mostly gentle slopes, with elevations ranging from about 2,700 to 3,500 feet. The boundaries of the District will encompass an area of about 11,300 acres when annexation proceedings are completed. The region in which the Littlerock Creek Irrigation District is located is shown on Plate 1, "Location Map", and a detailed map of the District is shown on Plate 2, "Land Use in 1961".

The climate of the area in which the District is located is characterized by high summer temperatures, low humidity, and little rainfall. Average annual precipitation is about 9 inches and occurs principally during the winter months. Average daily temperatures range from the high eighties during the summer months to the midsixties in the winter.

History of the Area

The economic development of the Antelope Valley began with the establishment of small farms there in the latter part of the nineteenth century. Prior to this period, there were only a few ranchers and roving bands of Indians in the area. The development of the area was stimulated by the completion, in 1876, of the Southern Pacific Railroad's mainline from San Francisco to Los Angeles through the Valley. Soon after the completion of the railroad, several communities were established, including Lancaster in 1884, Palmdale in 1886, and Littlerock in 1892. A further spur to development ensued from a wave of farmland speculation in the Antelope Valley and other portions of Southern California, beginning in 1886, induced by a passenger rate war between the region's two main rail systems, the Southern Pacific and the Santa Fe.

Land settlement in the Antelope Valley was also promoted by the passage of the Wright Act in 1887, which sought to "confer on farming communities powers of municipalities in the purchase, construction, or operation of irrigation works". By 1895, six irrigation districts were organized in the Antelope Valley under the Act, including the Littlerock Creek Irrigation District. All of these districts planned to obtain water supplies from the flow of mountain streams. The inadequacy of these irrigation projects became apparent when a severe and prolonged drought hit the area from 1894 to 1905. By the end of this period, all but the Littlerock Creek Irrigation District had failed, and nearly all of the acreage irrigated from surface water had been abandoned. The knowledge gained from this unfortunate experience hastened the development of ground water supplies and water storage systems in the area, resulting in the eventual establishment of a relatively stable agricultural economy in the District. The total acreage within the District utilized for agricultural purposes has been fairly constant during the past two decades.

Land Classification and Present Land Use

The Department of Water Resources made a land use survey of the southern part of the Antelope Valley in 1961. Data obtained from this survey and from detailed topographic maps of the area were used to prepare estimates of the amount of usable land in the Littlerock Creek Irrigation District.

In preparing these estimates, land areas in agricultural or urban use were identified and isolated from the total acreage under consideration. The remaining undeveloped land was separated into two classes: usable and unusable. Included in the unusable category were lands considered too steep

for either urban or agricultural use and lands constituting washes and streambeds. The results of the Department's land use survey and estimates of usable land in the Littlerock Creek Irrigation District, made in accordance with the above procedure, are shown in Table 1.

TABLE 1
PRESENT AND POTENTIAL LAND USE^{1/}

Type of land use	Total acreage
Urban land ^{2/}	639
Agricultural land	1,208
Semiagricultural land ^{3/}	<u>135</u>
Subtotal, present land use	1,982
Undeveloped usable land	<u>5,213</u>
Total usable land	7,195
Unusable land	<u>4,105</u>
Total land area	<u><u>11,300</u></u>

^{1/} As of 1961.

^{2/} Residential, commercial, industrial, and public.

^{3/} Farmsteads, feed lots, lawn areas, etc.

Restrictions on Future Development

A major factor tending to restrict the development of the Little-rock Creek Irrigation District is the competition the District faces from other portions of the Antelope Valley for homes, commerce, and industry. Because of the absence within the District of natural resources of industrial or commercial value other than sand and gravel deposits, future industrial growth will be primarily based on competitive factors of physical environment, land costs and availability, and related factors.

The area's future economic position will also be strongly affected by the availability of water. The future development of the area probably would be severely hampered without supplemental water supplies, because of the limited available local supply of ground and surface water. The importation of water from the State Water Project by the Littlerock Creek Irrigation District will relieve this adverse condition and assure the availability of water to meet the area's potential for future development.

Description of the Littlerock Creek Irrigation District

The Littlerock Creek Irrigation District is the sole survivor of the original six irrigation districts organized in the Antelope Valley during the early 1890's. The District's survival was due primarily to the installation of a pump which enabled it to tap the underlying ground water basin during the critical drought period from 1894 to 1905. The installation of this pump was regarded as something of an experiment, since pumps were not then in general use in this area. Since that time, the District has continued to supplement its gravity supply with pumped water.

In 1922, the Littlerock Creek Irrigation District entered into an agreement with the Palmdale Irrigation District for the joint construction of a storage dam on Little Rock Creek. The Little Rock Dam was completed in 1924, and has greatly improved the stability of the water supply obtained from this stream. The previously mentioned agreement also provides for the distribution between the two districts of the water entering Little Rock Reservoir.

Power to Contract with the State

The operations of the Littlerock Creek Irrigation District are governed by those provisions of the California Water Code relating to the establishment, organization, management, and financing of irrigation districts generally. (Division 11 of the Water Code, commencing at Section 20500, and commonly known as the Irrigation District Law.) An irrigation district may,

among other things, control, distribute, and store any water for the beneficial use of the district (Section 22075 et seq.), provide for drainage (Section 22095 et seq.), and develop and distribute electric power (Section 22115 et seq.). A district may make any necessary contracts to carry out the purposes of the district (Section 22230). A district is also authorized to contract for any property necessary for its purposes (Section 24252) and to contract with the State for the joint acquisition, disposition or operation of any property of a kind which might be acquired by the district (Section 23100). If the largest payment to be made in any year under a contract for property exceeds one-fourth of one percent of the total assessed valuation of the land in a district the contract is generally not valid until approved by the California Districts Securities Commission (Section 24253). An irrigation district is also given specific authority to contract for water from the State Water Project by provisions of the Central Valley Project Act (see Water Code Sections 11102, 11625, 11661, and 11662). Contracts of an irrigation district with the State do not require the approval of a district's electorate.

Fiscal Powers

An irrigation district may obtain funds for debt service, operating expenses and other district requirements by ad valorem assessment of land within the district, exclusive of improvements (Section 25500 et seq.), or by charges for water and other services (Section 22280). (Funds for the payment of obligations under a contract with the United States may also be raised by assessment according to benefits (Section 23242)). A district may issue both general obligation and revenue bonds (Section 24950 et seq.) under the supervision of the California Districts Securities Commission (Section 20000 et seq.; also, e.g. Sections 24957-24961, 25241, and 25403) with the approval of the

district electorate (Section 21925 et seq., Government Code Section 54300 et seq.). General obligation bonds are limited to a maximum 6 percent annual interest rate (Section 25208) and a maximum 50 year maturity (Section 25214). A district may also issue warrants (Section 24625 et seq.) which must be approved by the Districts Securities Commission if the amount is substantial (Section 24628.5) and by the district electorate if the maturity is longer than five years (Section 24633).

Organizational Provisions

An irrigation district is governed by a board of directors, elected by an electorate consisting of all registered voters who are residents of the district (Section 20527). The Irrigation District Law permits portions of the territory within a district to be formed into improvement districts (Section 23600) or distribution districts (Section 23500) for the purpose of bearing the cost of certain works benefiting only those areas. Subject to varying restrictions, funds may be raised within an improvement district by service charges (Section 23800 et seq.), by assessment according to benefits (Section 23626), or by ad valorem assessment (Section 23750 et seq.); and within a distribution district by service charges (Section 23552) or by ad valorem assessment (Section 23533). The Irrigation District Law provides procedures for the annexation of additional land (Section 26875 et seq.), the exclusion of land from the district (Section 26700 et seq.), the consolidation of two or more districts (Section 27150 et seq.) and the voluntary or involuntary dissolution of a district (Section 27400 et seq.). These provisions contain various safeguards for creditors of a district. For example, unless bondholders assent to an exclusion, the excluded land remains subject to assessment for the payment of all obligations outstanding at the time of exclusion as fully as though the land had not been excluded (Section 26776).

CHAPTER II. PRESENT AND FUTURE DEVELOPMENT OF THE ECONOMY

The economic development of the Antelope Valley and the Littlerock Creek Irrigation District began when settlers started farming there in the latter part of the nineteenth century. The growth of the agriculturally-supported economy was slow, until the opening of military airports during World War II and the establishment of several aircraft production and testing facilities there during the Korean conflict stimulated the urban development of the Antelope Valley and the Littlerock Creek Irrigation District. Urban development of the District is expected to continue through the 1970's and 1980's at a somewhat faster rate. The future urban development of the area has been predicated upon the availability of a water supply sufficient to sustain this growth. Although agricultural acreage in the District is expected to decline moderately, farming is expected to remain an important element of the economy during the projection period covered by this report.

Agricultural Activities

Although recent urban development has encroached upon farm acreage in the Antelope Valley and, to a lesser extent, in the Littlerock Creek Irrigation District as well, land use in these areas is still predominantly agricultural. A land use survey made by the Department in 1961 showed that 1,208 acres of land in the District were devoted to agricultural use. This figure represented about 60 percent of the developed land in the District and about 13 percent of the District's total land area. Nearly all of the agricultural acreage in the District was under irrigation. About half of the irrigated acreage was occupied by peach and pear orchards, a slightly lesser amount by fallow or idle land, and the balance by pasture and miscellaneous vegetable

crops. The approximate acreage devoted to agriculture in 1961 is shown in Table 1.

In order to preserve the rural atmosphere of the District, zoning provisions have been proposed which would tend to protect the present agricultural land from haphazard urban and semiurban development. Because of the large amount of vacant land in the District that is suitable for future urban development, and the probability that future population growth in the area will increase at a slow to moderate rate, there is a strong likelihood that a substantial amount of land in the District will be devoted to agricultural use in 1990. It was concluded, however, that agricultural users would not buy water from the State Water Project because the payment capacity of crops adaptable to the area will probably not be sufficient to repay the expected costs of this water. Nevertheless, it was necessary to make projections of irrigated farm acreages in the Littlerock Creek Irrigation District to determine the extent to which agriculture would draw upon local supplies, since this has a direct bearing on future demands for imported water.

In making projections of irrigated crop acreages in the Littlerock Creek Irrigation District, the following influencing factors were given consideration: land availability, possible urban encroachment, climatic conditions, crop adaptability and historical agricultural development patterns. Consideration of these factors led to the conclusion that irrigated agricultural acreage in the District would decline gradually by 1990. Table 2 shows the historical and projected acreages of irrigated crops in the District from 1960 to 1990.

TABLE 2
HISTORICAL AND PROJECTED ACREAGES
OF IRRIGATED CROPS
1960-1990

Crop type	:	1960	:	1970	:	1980	:	1990
Deciduous fruits		814		750		650		300
Pasture		140		125		100		70
Truck crops		<u>125</u>		<u>100</u>		<u>75</u>		<u>50</u>
Total acreage		<u>1,079</u>		<u>975</u>		<u>825</u>		<u>420</u>

Nonagricultural Activities

Although urban activities in the Antelope Valley have increased significantly since the start of World War II, the urban development of the District has expanded at a much slower rate. In contrast to some of the modern residential tracts which have been built just beyond the District's eastern boundary, many of the homes within the District are scattered among the orchards. Most of the food stores, service stations, and other businesses are located along Highway 138, the major route linking Littlerock with other Antelope Valley communities. Industrial activities within the District are confined largely to the packing of orchard crops, the milling of poultry and cattle feed, and the quarrying and processing of rock, sand and gravel for the building industry. Quarrying operations are conducted on a 430-acre site near Littlerock Creek. The urban development which has occurred since the start of World War II is attributable largely to the establishment of Air Force Plant 42 and, to a lesser degree, the establishment of Edwards Air Force Base.

Edwards Air Force Base, located about 25 miles north of Littlerock, employed about 6,600 civilian personnel and 4,100 military personnel at the end of 1964. Most of the work at the base is devoted to research and

development programs of the Air Force Research Training Command, the National Aeronautics and Space Administration, and associated federal agencies. While Edwards has had a relatively small effect on Littlerock's economy, it still provides jobs for some residents of the District.

Of greater importance to the economy of Littlerock is Air Force Plant 42, which is located about 10 miles northwest of that community near the City of Palmdale. Plant 42 was originally used by the Air Force during World War II, but the government has now leased its facilities to several private firms that are engaged in the testing, assembly and overhaul of aircraft for the United States Air Force. These firms employed about 2,500 persons in March 1965.

In 1958, the economy of the Antelope Valley was adversely affected by large-scale layoffs at Air Force Plant 42, where the work force was cut to about 3,000 persons. Since agriculture is the economic mainstay of the District, the effect of the cutback was not felt as heavily as in the surrounding areas. During the past few years, a moderate employment recovery at the plant has been followed by small losses, the net effect of which has been to reduce employment below the 1958 level. While further cutbacks appear in the offing in 1965, these losses are expected to be at least partially offset in the future by the growing use of these facilities for commercial production and testing.

Possibilities for Economic Development

Future prospects for economic growth in the Littlerock Creek Irrigation District will depend on its ability to expand its present economic base and on the location of industry in the Antelope Valley within commuting distance of the District. There are a number of factors which seem favorable to the District's future development, among them being climate, geographic location, and land availability.

The area's low humidity and rainfall are climatic conditions advantageous to industries requiring outdoor storage space. Furthermore, the year-round sunshine and relatively good climate should favor the development of new residential tracts, which will expand into the less populated areas as metropolitan centers become more urbanized.

Littlerock is located within a relatively short distance of the Los Angeles Metropolitan Area and is connected to this great market by a network of roads and highways. The Antelope Valley Freeway, now under construction and slated for completion by 1970, will increase the area's accessibility to Los Angeles and should be a significant stimulant to future growth. The main line of the Southern Pacific's inland route passes within seven miles of Littlerock and proceeds into Los Angeles via the San Fernando Valley. The railroad company has been considering the construction of a branch line through the southern part of the Antelope Valley which would connect with the Santa Fe line through the El Cajon Pass and then with the Southern Pacific line near Colton. The construction of this line would provide more direct railroad service to Littlerock and act as a further inducement to future growth.

Low-priced level land is readily available within the District, but this is not unique to the Littlerock area. Among the areas along the perimeter of metropolitan Los Angeles with which Littlerock will be competing for development are others which offer even more favorable conditions for future growth. Therefore, while the District has a considerable potential for future development, growth will probably not be as rapid nor as spectacular as growth in some of the other sections of Southern California.

Population

Population in the Littlerock Creek Irrigation District grew rather slowly between 1900 and 1950. At the end of that period, there were only about 500 persons in the District. The population of the District more than doubled during the next 8 years, primarily as a result of the buildup in employment at Air Force Plant 42. Following the 1958 layoff at that facility, population growth came to a standstill. Subsequently, the population level resumed its upward trend, although the rate of growth has been slower.

Projections of future population in the Littlerock Creek Irrigation District cannot be made solely by considering factors of natural increase and immigration applicable only to that particular area. Valid population forecasts must also consider the interrelationships between adjacent areas, their resources, states of development, external and internal economic and demographic pressures and other factors.

Population studies considering these factors were made by the Department for many subdivisions of Southern California and were reported in Bulletin No. 78, Appendix D, "Economic Demand for Imported Water". No projections were made specifically for the Littlerock Creek Irrigation District, but projections were made for the Antelope Valley generally. These projections were adjusted for purposes of this report to take into consideration the differences in the areas involved and the results of the 1960 U. S. Census of Population, not available during the Bulletin No. 78 studies, in order to arrive at population projections for the Littlerock Creek Irrigation District. In formulating these estimates, it was assumed that the local water supplies together with supplemental supplies to be obtained from the State Water Project would fully meet the water requirements of the District and that immigration would continue to provide the bulk of the population gains anticipated by 1990.

The population projections resulting from these studies and estimated historical populations in the Littlerock Creek Irrigation District are shown in Table 3 and in Figure 1.

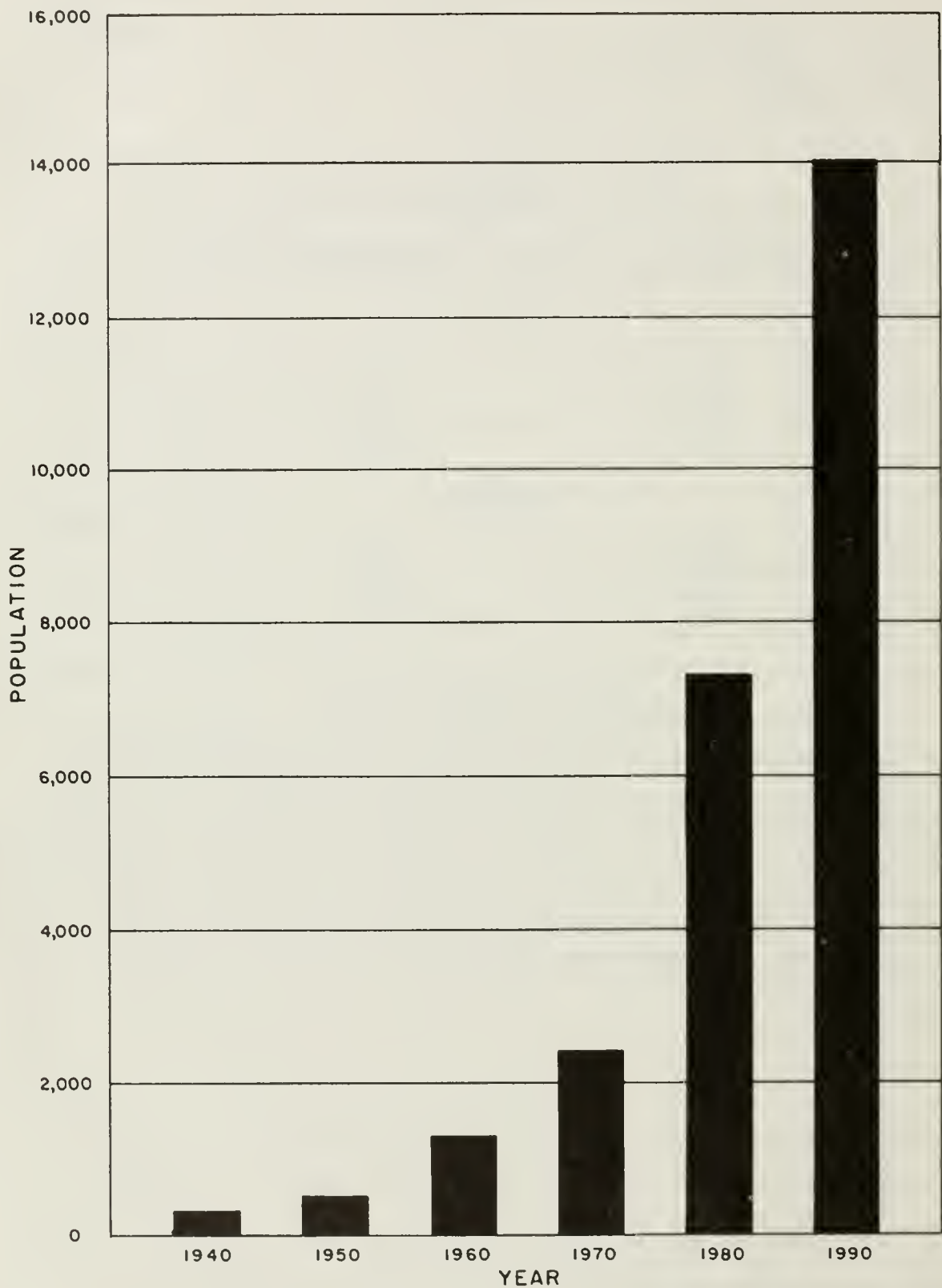
TABLE 3
HISTORICAL AND PROJECTED POPULATIONS
1940-1990

Year	Population
<u>Historical</u>	
1940	300
1950	500
1960	1,200
1964	1,300
<u>Projected</u>	
1970	2,400
1980	7,300
1990	14,000

Present and Future Land Use

An analysis of present land use within the boundaries of the Littlerock Creek Irrigation District indicates that 1,982 acres, or 17.5 percent of the 11,300 acres of land in the District's area are currently being put to beneficial use. Land use in the District, as of 1961, is shown on Plate 2, and the approximate acreages devoted to various land uses are shown in Table 4.

FIGURE 1



HISTORICAL AND PROJECTED POPULATION OF THE
LITTLE ROCK CREEK IRRIGATION DISTRICT
1940-1990

TABLE 4
LAND USE IN 1961

Type of land use	: Acres in use
Urban lands	<u>639</u>
Commercial	40
Residential	80
Industrial ^{1/}	469
Vacant	50
Irrigated agricultural lands ^{2/}	<u>1,079</u>
Pasture	140
Truck crops	125
Deciduous fruits	814
Nonirrigated agricultural lands	<u>129</u>
Grain	20
Deciduous fruits	18
Idle land	91
Semiagricultural land ^{3/}	<u>135</u>
Total land in use	<u>1,982</u>

^{1/} Including 428 acres devoted to sand and gravel production.

^{2/} Land temporarily idle at time of Department's land use survey was allocated to various crops on the basis of district crop acreage data contained in Department's Bulletin 21-60, "Irrigation and Water Storage Districts in California".

^{3/} Farmsteads, feed lots, lawn areas, etc.

Future land requirements for urban usage in the District were computed from projections of population and population densities. The experience in most urban areas has been that, as population increases, urban densities also increase up to certain levels. It was assumed that this pattern would also occur in the area under consideration; accordingly, projections of increased urban population densities were made, using 1960 population and urban land use data as a base. These projections were applied

to the projections of population to arrive at estimates of the total urban land requirements in the District. These urban land requirements are shown in Table 5.

TABLE 5
URBAN LAND REQUIREMENTS^{1/}
1960-1990

Year	Population	Urban population density, persons per acre	Urban land requirements, in acres
1960	1,200	5.7	211
1970	2,400	6.0	400
1980	7,300	6.5	1,120
1990	14,000	7.2	1,950

^{1/} Based on estimates of population densities outside of area devoted to sand and gravel production.

A steady reduction in irrigated farmland is anticipated in the area in the future, and by 1990, only about 400 acres of irrigated land and a very small amount of unirrigated land is expected to be devoted to agricultural use. From the data presented in this table and in Tables 1 and 2, it appears that only about 40 percent of the usable lands in the District will be in use by 1990 and that the availability of land will have no restrictive effect on population growth and economic development before that time.

CHAPTER III. DEMAND FOR PROJECT WATER

Most of the water consumed in the Littlerock Creek Irrigation District at the present time, as in the past, is devoted to agricultural use. During 1960, the total annual water requirements of the Littlerock Creek Irrigation District amounted to about 2,700 acre-feet. Agricultural needs accounted for about 89 percent of the District's beneficial use, while urban demands accounted for the remaining 11 percent of the total. During the next few decades, urban water needs are expected to account for a steadily increasing share of the District's total water use, as the result of advancing urbanization.

Future supplemental water requirements in the District were determined by taking the difference between the estimated water requirements and the estimated local water supplies available in the area.

Present and Future Unit Water Use

Estimated unit values of urban water use in the District were based on studies made by the Department for Bulletin No. 78. The unit values in Bulletin No. 78 were developed for the Antelope Valley as a whole while the values shown in this report have been modified to reflect the actual water use in the District. Estimates of present and future unit values of urban water use are shown in Table 6.

TABLE 6

ESTIMATED PRESENT AND FUTURE UNIT VALUES OF URBAN WATER USE 1960-1990

Year	: Gallons per capita : per day	: Acre-feet per capita : per year
1960	220	0.246
1970	223	.250
1980	232	.260
1990	240	.270

The unit values of consumptive use of applied water for irrigated agriculture were obtained from Bulletin No. 78, and are shown in Table 7.

TABLE 7

ESTIMATED ANNUAL CONSUMPTIVE USE OF
APPLIED WATER FOR IRRIGATED CROPS,
IN FEET OF DEPTH

Crop	: Consumptive use
Alfalfa	3.0
Pasture	2.8
Deciduous fruits	2.2
Truck crops	1.4
Potatoes	1.4
Field crops	2.0
Grain	0.8

Present and Future Water Use

The present and future water requirements for municipal and industrial purposes was determined by applying the appropriate estimates of per capita water use to the projections of population for each decade. Table 8 shows the total urban water requirements for the District from 1960 to 1990.

TABLE 8

PRESENT AND PROJECTED URBAN WATER REQUIREMENTS
1960-1990

: Year	: Population	: Unit values of urban water use, in ac-ft per capita per year	: Total urban water requirements, in acre-feet per year
1960	1,200	0.246	300
1970	2,400	.250	600
1980	7,300	.260	1,900
1990	14,000	.270	3,800

Estimates of present and future water use for irrigation purposes in the area were determined by applying the unit values of water use shown in Table 7 to the projections of irrigated crop acreages presented in Table 2. Table 9 indicates the present and future irrigation water requirements in the District from 1960 to 1990.

TABLE 9
PRESENT AND PROJECTED AGRICULTURAL WATER REQUIREMENTS
1960-1990

Year :	Irrigated acres :	Requirements, in acre-feet per year :
1960	1,079	2,400
1970	975	2,100
1980	825	1,800
1990	420	900

Local Water Supplies

Water supplies in the District are obtained at the present time by the pumping of ground water stored in the Rock Creek and Buttes Ground Water Basins and by the diversion of surface flow from Little Rock Creek. The Rock Creek and Buttes Ground Water Basins underlie most of the District and are fed primarily by surface flows from Little Rock Creek. In addition, Buttes Ground Water Basin is supplied by underflow from Rock Creek Ground Water Basin.

Saturated alluvium, estimated to range to 300 feet beneath the surface near the San Gabriel Mountains and to over 1,100 feet at the north-west and north-central boundaries of the District, is composed primarily of porous and permeable materials from alluvial fans. Available data indicate that ground water levels have been declining at the rate of about 2 feet per year over the past 20 years and that the present water level mean is approximately 175 feet below the surface of the ground.

Diversion of Surface Water From Little Rock Creek

In order to intercept and store runoff from Little Rock Creek, the Palmdale and Littlerock Creek Irrigation Districts entered into an agreement in 1922 for the joint construction of a dam on Little Rock Creek. Under the terms of this agreement, the Littlerock Creek Irrigation District has the exclusive right to the first 13 cubic feet per second, measured at the point of inflow into the reservoir, and flood waters of the creek in excess of 13 cubic feet per second are divided on the basis of one-fourth to Littlerock Creek and three-fourths to the Palmdale Irrigation District. Studies of the water supply indicate that on a yearly basis, and by using the storage reservoir, Little Rock Creek will yield about 1,000 acre-feet per year for the District and an additional amount for Palmdale. Water is diverted from Little Rock Reservoir through a diversion canal, from where it is distributed to agricultural users.

Water Reclamation and Ground Water Recharge

The geographic situation of Littlerock Creek Irrigation District prevents extensive utilization of reclaimed sewage effluent, though other areas within the Antelope Valley Ground Water Basin may be able to use the effluent from the District. Accordingly, the net supplemental water requirements of the Littlerock Creek Irrigation District do not include any allowance for the reclamation and reuse of sewage effluent.

Data obtained from the Littlerock Creek Irrigation District indicate that local water supplies are already being used to their fullest extent at the present time. These supplies, which are obtained by the pumping of ground water and by the diversion of surface flow from Little Rock Creek, amount to about 2,700 acre-feet of water annually. In arriving at estimates of future

supplemental water requirements in the District, it was assumed that local water supplies will remain at their present level through 1990. Table 10 shows total water requirements, estimated local water supplies, and supplemental water demand in the Littlerock Creek Irrigation District from 1960 to 1990.

TABLE 10
TOTAL WATER DEMAND AND DEMAND FOR
SUPPLEMENTAL WATER, IN ACRE-FEET PER YEAR
1960-1990

Year	: Urban : demand	: Agricultural : demand	: Total : demand	: Local water : supplies	: Demand for : supplemental water
1960	300	2,400	2,700	2,700	0
1970	600	2,100	2,700	2,700	0
1980	1,900	1,800	3,700	2,700	1,000
1990	3,800	900	4,700	2,700	2,000

Demand for Project Water

Local water supplies within the Littlerock Creek Irrigation District are substantially fully developed at the present time. There are no surface streams within the District that can be economically developed, and the ground water resources of the District are overdrawn. The future growth of demand for water must be satisfied by the importation of water.

Demand for project water, although taking into consideration the preference of the District with respect to the extent of water deliveries, was primarily based on two criteria: (1) that imported water deliveries would be solely for urban usage and (2) that such deliveries would supplement ground water extractions as a source of water supply. Also considered were the present and future water production facilities now in use and expected to be in use in the District. Under conditions of water importation, it is

expected that the existing wells in the District would not be retired but would remain in operation to provide a portion of the water requirements of the area.

From the supplemental water requirements shown in Table 10, a schedule of demands for water from the State Water Project was constructed and included in the District's water supply contract with the State. This schedule is shown in Table 11.

TABLE 11
DEMAND FOR PROJECT WATER
1972-1990

Year	:	Demand for project water, in acre-feet
1972	:	150
1973	:	250
1974	:	350
1975	:	450
1976	:	560
1977	:	630
1978	:	800
1979	:	900
1980	:	1,000
1981	:	1,100
1982	:	1,200
1983	:	1,300
1984	:	1,400
1985	:	1,500
1986	:	1,600
1987	:	1,700
1988	:	1,800
1989	:	1,900
1990	:	2,000

CHAPTER IV. COST OF WATER SERVICE FROM THE STATE WATER PROJECT

The cost of water service from the State Water Project includes the District's allocated portion of project transportation and conservation costs and the cost of local conveyance systems required to deliver water to the consumer. Necessary local conveyance systems and other local facilities will be constructed and financed by the District. Construction of the State Water Project, on the other hand, will be done by the State and will be financed with moneys from the California Water Fund and from the sale of general obligation bonds authorized under the California Water Resources Development Bond Act.

Under the standard contract for water service, each contracting agency undertakes an obligation to repay the State for its share of costs associated with water deliveries from the State Water Project. These costs include a proportionate share of the cost incurred for the construction of transportation facilities and the operation and maintenance costs of these facilities, plus the Delta Water Charge. Capital costs of the transportation facilities and the fixed, or minimum operation, maintenance, power and replacement costs are allocated among all contractors by the proportionate use of facilities method. This method provides that the allocation of these components to each contractor will be based upon the contractor's capacity requirements and maximum annual entitlements to be conveyed through the reaches used to serve the contractor. Since all deliveries for the District are assumed to be on a continuous flow basis, no capacity will be provided in the California Aqueduct for regulation of flows.

State Water Project Facilities

The Littlerock Creek Irrigation District's proportionate share of the capital costs of the State Water Project can only be estimated until the time actual costs can be derived following the construction of applicable facilities. District costs presented in this chapter are based on 1964 project cost estimates and on the assumption that the District would obtain a maximum annual entitlement of 2,000 acre-feet of water from the State Water Project.

The District is ideally situated with respect to the California Aqueduct, as the proposed alignment passes through the southern portion of the District at an elevation of approximately 3,000 feet, which would allow a substantial portion of the District to be served by gravity flow. The aqueduct will be mostly canal sections in the Antelope Valley, with pipe sections crossing difficult areas.

The total allocated construction costs of the State Water Project to the District are estimated to be about \$475,000 for a maximum annual entitlement of 2,000 acre-feet. This would require a maximum annual repayment of principal and interest by the District of about \$20,283. The annual capital repayment in both cases would be lower than the amounts mentioned above in years prior to 1977 and after 2013. Pursuant to the water supply contract, project operation, maintenance, power and replacement costs are divided into a minimum component and a variable component. The minimum component is composed of costs which occur irrespective of the amount of water delivered, and the variable costs are those which are dependent on the amount of water delivered. The maximum amount of these charges for the District would be about \$6,089 and \$55,018 per year, respectively, in 1991.

The final component of annual cost to the District for water deliveries from the State Water Project will be the Delta Water Charge, based on the schedule of estimated annual water deliveries in the District's water service contract. At the time District feasibility studies were made, it was estimated that the Delta Water Rate would be \$7.29 per acre-foot from 1970 on. Table 12 indicates the estimated annual component costs of water service from the State Water Project to the Littlerock Creek Irrigation District for specific years during the period of buildup in water demand to 1990, the year of maximum demand.

TABLE 12

ANNUAL COMPONENT COSTS OF WATER SERVICE
FROM THE STATE WATER PROJECT
1964-1990

Year	Estimated annual water delivery, in acre-feet	Transportation charge				Total annual payment to State
		Annual ^{1/} capital payment	Minimum ^{2/} annual operation and maintenance	Variable ^{3/} annual operation and maintenance	Annual Delta Water Charge	
1964	0	\$ 1,370	\$ 0	\$ 0	\$ 0	\$ 1,370
1972	150	18,853	5,796	2,381	1,094	28,124
1980	1,000	20,283	5,797	20,347	7,290	53,717
1990	2,000	20,283	6,086	54,971	14,580	95,920

^{1/} Annual capital payment would remain at the 1977 maximum until 2013, after which time it would continually decrease, reaching zero in 2026.

^{2/} Minimum operation and maintenance charges are those necessary to maintain the system even though there are no water deliveries to the District.

^{3/} Variable operation and maintenance charges are those associated with moving water to the District's area.

Local Distribution Facilities

The Littlerock Creek Irrigation District will not require an extensive local conveyance system, as water from the State Water Project can be taken directly into the existing system in the vicinity of Little Rock Creek. Only a short length of conduit will have to be constructed to connect the District's system to the aqueduct; therefore, no cost for local service to the ultimate consumer was considered. While the local facilities of the District will have to be expanded to keep pace with the District's continued growth, the costs involved were considered as a part of the regular expansion program and not directly attributable to service from the State Water Project.

CHAPTER V. ECONOMIC JUSTIFICATION AND FINANCIAL CAPABILITY

Important and basic elements relative to the execution of a water supply contract between the State and the Littlerock Creek Irrigation District are the economic justification of entering into such a contract and the financial capability of the District to perform under the contract. Economic justification shows the worth of the proposed water service, while financial capability indicates an ability on the part of the District to repay the costs of water importation.

Economic Justification

A water development project can be considered economically justified if, as a minimum, the estimated benefits exceed the total economic costs and if each project purpose provides benefits at least equal to its allocated costs. In analyzing the economic justification of a water project for urban purposes, this has been shown by demonstrating that a need exists for additional water supplies, that alternative sources of water would be more costly, and that the area's economic development would be restricted without additional water. Water service from the State Water Project to the Littlerock Creek Irrigation District is contemplated only for urban purposes; accordingly, the standards mentioned above were used as the bases for determining whether the project was economically justified.

The analyses presented in Chapter III demonstrated that the future economic development of the investigational area was dependent upon the receipt of imported water. Therefore, it was necessary to determine whether project water can be delivered at costs not unreasonably above present water costs in the area since there is no practical alternative source of additional water there except from large-scale overdrafting of the ground water basin.

Under the forecasted conditions of future growth, the Littlerock Creek Irrigation District would supply about 40 percent of its area's total water needs in 1990 with water imported through the State Water Project facilities. The present cost of domestic water production in the District was not determined, but the cost to consumers in the District is currently about \$60 per acre-foot. The cost of imported domestic water to the District will be about \$47 per acre-foot on an equivalent unit rate basis (i.e., the cost that, when applied to each acre-foot of entitlement during the full repayment period, will repay all costs at the applicable interest rates). It is estimated that the additional costs incurred in delivering the water to consumers will raise this cost to between \$60 and \$70 per acre-foot, a total only moderately higher than the current cost of domestic water used in the District.

The economy of the area has expanded during the past few years under current water cost conditions, indicating that benefits accruing from local water supplies have exceeded the cost of water to users in the area. Since the cost of water to consumers under conditions of water importation is expected to be reasonably close to current water costs, it is probable that economic development of the area will continue in the future and that benefits accruing to the area from water importation will exceed water costs. On this basis, it was concluded that water importation for urban purposes from the State Water Project will be economically justified.

Financial Capability

To establish the financial capability of a public agency to undertake a particular project, it is necessary to show that the public credit of the agency is strong enough to reasonably support the day-to-day operating costs of the project and to repay any long-term debt and other fixed

obligations which it will have to undertake in order to finance the project. In this instance, it is necessary to show that the Littlerock Creek Irrigation District will not be unduly burdened by its overall debt and the aggregate amount of its unpaid fixed annual obligations during the project repayment period. Furthermore, it must be shown that methods of obtaining funds for repayment of the District's debt and fixed annual obligations are practical and reasonable.

Historical and Projected Assessed Valuations

A necessary part of a study of financial feasibility is to select a base that the area can use to determine its ability to repay its obligations. A principal base for determining repayment ability is the assessed valuation of the area.

The assessed valuation of property within the Littlerock Creek Irrigation District during the fiscal year 1962-63, as assessed by the County Assessor, was about \$2,628,000. This valuation represents an estimated market value of about \$10,647,000. In addition to assessments made by the County Assessor, separate assessments are made on land by officials of the Littlerock Creek Irrigation District, as described later in this report.

The assessed valuation of the area encompassed by the District moved steadily upward from about \$995,000 in 1955-56 to about \$2,628,000 in 1962-63. Table 13 shows the trend of assessed valuations in the Littlerock Creek Irrigation District from 1955 to the present, as estimated by the Department.

TABLE 13
HISTORICAL ASSESSED VALUATIONS

Year	Assessed valuation	Increase over previous year
1955-56	\$ 995,000	-
1956-57	1,358,000	36.5%
1957-58	1,941,000	42.9
1958-59	2,183,000	12.5
1959-60	2,313,000	6.0
1960-61	2,433,000	5.2
1961-62	2,488,000	2.3
1962-63	2,628,000	5.6

Assessed valuations of property in the Littlerock Creek Irrigation District will undoubtedly continue their generally increasing trend through 1990, as the area's population and economy continue to expand. For purposes of analyzing the financial capability of the area to pay for service from the State Water Project, it was necessary to make projections of future assessed valuations of property within the Littlerock Creek Irrigation District. These projections were conservatively made, based on the assumption that per capita assessed valuations in the District would remain near present levels during the projection period. The assessed valuations projected for the Littlerock Creek Irrigation District area are shown in Table 14.

TABLE 14

HISTORICAL AND PROJECTED ASSESSED VALUATIONS
1960-1990

Fiscal year	Population	Assessed value per capita	Total assessed valuation
1959-60	1,200	\$1,928	\$ 2,313,000
1969-70	2,400	2,000	4,800,000
1979-80	7,300	2,000	14,600,000
1989-90	14,000	2,000	28,000,000

Historical and Projected Bonded Indebtedness

The Littlerock Creek Irrigation District currently^{1/} carries a bonded debt of about \$380,000, which is equal to 15.3 percent of the District's assessed valuation. School bonds account for the greatest proportion of the debt in the District, comprising 76 percent of the total. Included in this debt, the Littlerock Creek Irrigation District, as a separate political entity, currently carries a bonded debt of \$23,000. Table 15 indicates the present bonded indebtedness for which property owners in the Littlerock Creek Irrigation District are responsible.

TABLE 15

PRESENT BONDED INDEBTEDNESS BY TYPE OF DISTRICT^{1/}

Type of district	Amount
General county	\$ 13,336
Schools	288,257
Flood control	46,980
Littlerock Creek Irrigation District	23,000
Hospital	<u>8,564</u>
Total	<u>\$380,137</u>

^{1/} as of June 30, 1962.

While assessed valuations in the Littlerock Creek Irrigation District have increased substantially in the past decade, bonded indebtedness has risen at nearly the same rate. As a result, the percentage of bonded debt to assessed valuations has decreased slightly from around 16 percent in 1957 to about 15 percent in 1962. Table 16 shows the bonded indebtedness in the past six years in comparison with assessed valuations, as estimated by the Department for the area under consideration.

TABLE 16
HISTORICAL BONDED INDEBTEDNESS
1957-1962

Year ^{1/}	Bonded debt	Assessed valuation	Debt as percent of valuation
1957	\$222,000	\$1,358,000	16.3
1958	283,000	1,941,000	14.6
1959	322,000	2,183,000	14.8
1960	399,000	2,313,000	17.2
1961	393,000	2,433,000	16.2
1962	380,000	2,488,000	15.3

^{1/} As of June 30.

Although it is difficult to predict the extent to which bonded indebtedness will be incurred on lands within the Littlerock Creek Irrigation District, it was assumed, for the purposes of this study, that the relationship between debt and assessed valuation would remain at the June 30, 1962 level of 15.3 percent. This ratio was assumed to remain constant for future bonded debt exclusive of the costs accruing from the State Water Project.

Financing Future Obligations

The determination of financial capability requires an analysis of several interrelated factors, including the amount of money required to pay the District's allocated share of costs, the probable necessary repayment schedule, present and future assessed valuations, current and future debt for other public works, tax rates prevalent in the area, and additional tax rates that will be incurred in undertaking the importation of project water.

For this report, an investigation was made of many facets of the District's present financial situation to provide a basis for analyzing its future financial position. The data gathered in this investigation are presented in detail in Appendix B of this report, entitled "Credit Analysis of the Littlerock Creek Irrigation District."

Comparison with Assessed Valuations. In 1962 the percentage of bonded indebtedness to assessed valuation in the Littlerock Creek Irrigation District was 15.3 percent. The present bonded debt of the Littlerock Creek Irrigation District is expected to increase in the future more or less commensurately with increases in assessed valuation. This debt will be augmented, however, by the additional debt incurred by the agencies for service from the State Water Project.

From the schedules of estimated allocated construction costs and assessed valuations, the aggregate unpaid amount of the District's allocated share of the capital cost of the transportation facilities of the State Water Project in any one year was calculated as a percentage of assessed valuation for comparison purposes. These percentages are shown in Table 17. As stated in Chapter IV, construction of an extensive local distribution system will not

be necessary; consequently, any debt which may accrue to the District for local distribution will be small. Accordingly, Table 17 does not include any costs associated with local conveyance facilities.

TABLE 17
SUMMARY OF CAPITAL REPAYMENT OBLIGATIONS
RESULTING FROM WATER SERVICE
1963-1990

Year	Assessed value (\$000)	Aggregate unpaid capital costs of the transportation portion of State Water Project	
		Amount (\$000)	Percentage of assessed value
1963	\$ 2,628	\$ 22	0.8
1972	6,200	427	6.9
1980	14,600	419	2.9
1990	28,000	353	1.3

In the year when the ratio of the sum of the outstanding debt and the aggregate unpaid transportation capital costs to assessed valuation is the highest, occurring about 1970, the aggregate unpaid transportation capital costs for water service and total public debt would be about 22.3 percent of the assessed valuation in the Littlerock Creek Irrigation District. Thus, even at a maximum, the area's ratio of the sum of outstanding public debt and aggregate unpaid transportation capital costs to valuation would appear to be reasonable. The ratio of outstanding debt plus aggregate unpaid transportation capital costs to assessed valuation would decline each year after the maximum year.

Levels of Ad Valorem Taxation. Property tax rates in the Little-rock Creek Irrigation District vary from place to place. Considering the total assessed valuation of the area and its total tax levies, however, the average tax rate for 1964 was about \$7.68 per \$100 assessed valuation.

Tax rates in the Littlerock Creek Irrigation District have tended to increase in the past several years, in line with the trend in most areas of Southern California. Table 18 indicates the weighted average tax rates and their component parts in the District for the past six years.

TABLE 18

WEIGHTED AVERAGE AD VALOREM TAX RATE COMPONENTS

Year	Tax rate (per \$100 assessed value)				
	General	School	LACFCD ^{1/}	Special ^{2/}	Total rate
	: county rate	: districts	:	: districts	:
1957-58	\$1.92	\$3.77	\$0.26	\$0.95	\$6.90
1958-59	1.97	3.75	.27	0.82	6.81
1959-60	2.09	3.74	.37	1.01	7.21
1960-61	2.06	3.73	.34	0.98	7.11
1961-62	2.06	4.23	.33	0.93	7.55
1962-63	2.08	4.28	.32	1.00	7.68

^{1/} Los Angeles County Flood Control District.

^{2/} Excluding tax levy by Littlerock Creek Irrigation District.

In addition to taxes collected by the County, separate taxes for debts incurred by the Littlerock Creek Irrigation District are levied and collected by officials of the District. An irrigation district is authorized to levy an annual assessment against land valuations in the district to raise funds necessary for the payment of interest and principal on bonded debt and for the maintenance and operation of the district. The valuations against which taxes may be levied are fixed each year by the district assessor and entered on an assessment roll. At the present time, all land is assessed by the Littlerock Creek Irrigation District on an acreage basis. The current assessment rate of the District is \$500 per acre with a minimum assessment of \$500 per parcel for land holdings of less

than one acre in size. During 1963, all lands in the District were assessed at the rate of \$1.50 a year per \$100 assessed valuation. Table 19 shows the taxes levied by the Littlerock Creek Irrigation District during the past six years.

TABLE 19
TAX LEVIES FOR WATER SERVICE BY THE
LITTLEROCK CREEK IRRIGATION DISTRICT
1958-1963

Year	:	Total levy
1958		\$10,048
1959		10,093
1960		10,133
1961		10,144
1962		15,224
1963		15,008

Under the payment schedule for the capital cost component of the transportation facilities developed during contract negotiations with the District, the Littlerock Creek Irrigation District was required to make a payment to the State of about \$1,370 in 1964 for a maximum annual entitlement of 2,000 acre-feet. The amount paid will increase each year until 1977, when an annual payment of about \$20,283 is estimated to be required on the capital cost component of the transportation charge. Payments will remain constant from 1977 to 2013, after which time they will decline until the capital costs have been fully repaid in 2026.

At the present time, the District's taxes are raised only by levies on land valuations made by officials of the District. The District's present method of assessing land is based solely on an area concept and

does not take into account the other factors which determine its value. Among these factors are the uses to which the land is devoted, its general location, and its geographical nature.

For this reason, the method of assessment used by the District will result in some serious tax inequities in meeting the burdens incurred by a water supply contract. This defect could, to a large extent, be overcome if the District used county land valuations as a basis for its tax levies or changed its method of assessment to conform more closely to county procedure. Land assessments performed by the County Assessor historically have increased with the development of improvements on the land and with the extent of urbanization and would therefore be more likely to reflect the land's true value. Inasmuch as the District has the power to take these steps, the tax rates necessary for repayment of the capital cost component of the transportation charge under the water supply contract with the State have been computed by dividing the annual capital repayments by estimates of future land valuations, using current county land valuations as a base. This was done in order to see if the necessary rate of taxation would place an unreasonable burden on the taxpayers of the area, should all payment obligations arising from the capital cost component of the contract transportation charge be collected through ad valorem taxation. The tax rates computed as necessary for such payment, based on a maximum annual entitlement of 2,000 acre-feet, are shown in Table 20.

TABLE 20

TAX RATE NECESSARY FOR CAPITAL REPAYMENT -
OF ANNUAL CAPITAL COST COMPONENT OF
WATER SUPPLY CONTRACT TRANSPORTATION CHARGE
1972-1990

Year	Assessed value (\$000) ^{1/}	Annual capital cost component of the water supply contract transportation charge Amount	Tax rate ^{2/}
1972	\$2,418	\$18,853	\$0.78
1980	5,110	20,283	.40
1990	8,400	20,283	.24

^{1/} Assessed value of land only.

^{2/} In dollars per \$100 assessed valuation of land.

The maximum tax rate, in 1972, would amount to \$0.78 per \$100 assessed valuation of land only in the district. The Palmdale Irrigation District intends to introduce in the State Legislature an amendment to the California Water Code which would allow irrigation districts contracting with the State for supplemental water supplies to levy taxes on improvements as well as on land. At present, irrigation districts can levy taxes on land valuations only. Such a change in the Water Code would allow a more equitable basis for levying taxes for repayment of project costs allocated to the District and would permit a substantial reduction of the tax rates necessary for capital repayment should the District desire to repay project costs in such a manner.

For purposes of this report, it was assumed that the annual payment for the capital cost component of the contract transportation charge would be accomplished through ad valorem taxation on land, and that other ad valorem property taxes would remain close to current levels in the future. Consideration was given to these projected tax rates and to the ratio of the sum of

bonded debt and aggregate unpaid transportation capital costs to future assessed valuations under conditions of water importation. Comparisons of these conditions were made against similar conditions in other areas. From these considerations, it was concluded that the Littlerock Creek Irrigation District would have the financial capability of successful performance of its obligations under its water supply contract with the State, to the extent of 2,000 acre-feet of annual water delivery as a maximum entitlement.

CHAPTER VI. CONCLUSIONS

Analysis of the data gathered and presented in this report has led to the following conclusions:

1. The Littlerock Creek Irrigation District has the potential for considerable population and economic growth. External pressures point to a high probability for increases in population and employment if sufficient water supplies are available to support future growth.

2. The local water supplies available in the District are not sufficient to satisfy its future requirements, and, therefore, its future growth will be restricted unless a supply of supplemental water is made available.

3. The use of local ground water supplies projected in this report is subject to uncertainties as to whether or not this is a dependable supply. Although there is a reasonable possibility that this supply may be used indefinitely, the District should closely observe ground water conditions in the future in order to make sure that no deleterious effects occur to either the ground water basin or to the area's economic development.

4. The Littlerock Creek Irrigation District will have an economic demand for water from the State Water Project of about 2,000 acre-feet per year by the year 1990.

5. The Littlerock Creek Irrigation District is empowered by its enabling legislation to enter into contracts with the State for the importation of water supplies.

6. The Littlerock Creek Irrigation District will not be required to build an extensive local conveyance system. Therefore, financing the construction of necessary local facilities, in addition to the fixed annual obligations that the District will incur under its water supply contract

with the State, will not increase the District's total ratio of debt and fixed annual obligations to assessed valuation beyond acceptable limits.

7. The Littlerock Creek Irrigation District has the necessity, the economic justification, and the legal ability required to enter into a contract with the State for service from the State Water Project, and will have the financial capability required for successful performance of the contract without imposing an undue burden on its taxpayers.

APPENDIX A

RECOMMENDATION ON OPTION WATER FOR

THE LITTLE ROCK CREEK IRRIGATION DISTRICT

APPENDIX A

RECOMMENDATION ON OPTION WATER FOR THE LITTLEROCK CREEK IRRIGATION DISTRICT

On February 13, 1964, the Littlerock Creek Irrigation District transmitted to the Department a resolution expressing the District's desire to exercise its option for an increase in its maximum annual entitlement by 300 acre-feet under the provisions of Article 8, and proposing amendments to Table A, reflecting a suggested delivery schedule of annual entitlements including the additional water. A copy of the District's original Table A and proposed revision to Table A appears at the close of this appendix.

We have analyzed the District's request to determine if the water may be put to beneficial use prior to 1990 and to determine if the District has the financial ability to pay for the added water.

Need for Option Water

Bulletin 119-20, entitled "Feasibility of Serving the Littlerock Creek Irrigation District from the State Water Project", has estimated that an annual entitlement of 2,000 acre-feet will meet the District's supplemental urban water requirements to the year 1990. The District has signed a contract with the State for that amount.

The District has now elected to exercise its option for an additional 300 acre-feet per year. Justification for the additional water must be based upon the ability of the District to put the water to beneficial use by 1990. Supplemental water requirements for the Littlerock Creek Irrigation District have been reevaluated and a number of factors were considered. These included projected population gains, expected urban development, and potential for sustaining existing agriculture.

The Littlerock Creek Irrigation District has, in the last decade, 1950 to 1960, experienced a modest population growth. The population projections made by the Department for the District have taken this into consideration and the population estimates appear to be adequate, since the change has been one of percentage change rather than one of quantitative change. Also, considering projections made for other nearby agencies, it appears that population estimates for the District are of the right order of magnitude.

Irrigated agriculture occupies a considerable portion of the land area of the District. The farmers apparently intend to continue their agricultural interests at least through 1990, and even the possibility of urban expansion does not appear as if it will severely affect agricultural productivity. The effect of continuing agricultural interests would mean a continuing need for agricultural water during that period of time.

While it appears that the District will have enough water from local sources and from its original maximum annual entitlement of 2,000 acre-feet to meet its needs through 1990, this estimate is based on the assumption that the amount of local water supplies available to the District will not be reduced because of the continued overdraft of the Antelope Valley Ground Water Basin. In recent years, this overdraft has caused a continued lowering of water levels in wells owned by the District. Because of the possibility that the District may suffer a reduction in the amount of local water it may obtain in the future, and because of the importance of allowing each local agency to make decisions with regard to the magnitude of future water requirements if there is a measure of uncertainty involved, it appears that the agency should be allowed to obtain the option water.

Financial Ability to Pay for Option Water

The ratio of bonded debt to assessed valuation in the Littlerock Creek Irrigation District is currently about 15.3 percent. In the year when the ratio of the sum of the outstanding debt and the aggregate unpaid transportation capital costs to assessed valuation is the highest, occurring in 1970, the aggregate unpaid transportation capital costs and total public debt would be about 22.3 percent. If the District obtained the additional 300 acre-feet of option water, the increased financial obligations resulting therefrom would result in a maximum ratio of bonded indebtedness and aggregate unpaid transportation capital costs to assessed valuation of approximately 23 percent. This is considerably less than 30 percent, which has been considered to be about the maximum reasonable debt to valuation ratio. Thus, it appears that the financial obligations imposed by obtaining option water would not unduly burden the District.

Conclusions and Recommendations

It is our conclusion that the Littlerock Creek Irrigation District will be able to put the requested supply of option water to timely and beneficial use, and that the increased fixed annual obligations that would be incurred by the receipt of this additional water would not impose an unreasonable burden on the taxpayers of the District. We therefore recommend that the District's request for additional water be accepted and that the District's contract be revised to increase its maximum annual entitlement by 300 acre-feet as shown in the following Table A.

TABLE A

ANNUAL ENTITLEMENTS
LITTLEROCK CREEK IRRIGATION DISTRICT
(in acre-feet)

Year	:	Water Delivery	:	Contract	:	Modified
	:	Year	:	Table A	:	Table A
1		1972		150		170
2		1973		250		290
3		1974		350		400
4		1975		450		520
5		1976		560		640
6		1977		630		730
7		1978		800		920
8		1979		900		1,040
9		1980		1,000		1,150
10		1981		1,100		1,270
11		1982		1,200		1,380
12		1983		1,300		1,500
13		1984		1,400		1,610
14		1985		1,500		1,730
15		1986		1,600		1,840
16		1987		1,700		1,960
17		1988		1,800		2,070
18		1989		1,900		2,190
19		1990		2,000		2,300
And each succeeding year thereafter, for the term of this contract as a maximum annual entitlement:				2,000		2,300

APPENDIX B
CREDIT ANALYSIS OF THE
LITTLE ROCK CREEK IRRIGATION DISTRICT

APPENDIX B

CREDIT ANALYSIS OF THE
LITTLEROCK CREEK IRRIGATION DISTRICT

A. Statement of Debt of the Littlerock Creek Irrigation District

1. Net Direct Debt (full faith and credit), as of June 30, 1962

a. Bonds: \$23,000

b. Floating debt: none

c. Total debt: \$23,000

2. Special Obligations (not full faith and credit): none

3. Limitations on Debt

a. Warrants: The interest rate on warrants may not exceed 6 percent per year. The total amount of warrants payable in any one year may not exceed one-fourth of 1 percent of the total valuation of land in the District unless approved by the California Districts Securities Commission. Warrants may not mature more than five years from the date of issue unless their issuance has been authorized by a majority of voters in a district election. There is no provision in the California Water Code for the issuance of promissory notes as such by irrigation districts.

b. Bonds: Issued under the supervision of the California Districts Securities Commission. The issuance of general obligation bonds requires the approval of a 2/3 majority of voters in a bond election, unless the bond issue was proposed by petition. Revenue bonds require approval of a majority of voters. General obligation bonds may not bear an interest rate of more than 6 percent per year and maturity may not exceed 50 years.

c. Applicable statutes: The Irrigation District Law (Division 11 of the California Water Code), particularly Sections 21925 et seq. (bond elections), Sections 24600 et seq. (warrants), Sections 24950 et seq. (bonds). See also the Districts Securities Commission Law (Water Code Sections 20000 et seq.) and the Revenue Bond Law of 1941 (Government Code Sections 54300 et seq.).

B. Debt of Overlapping, Coterminous, and Underlying Political Units

Name and character of unit bearing bonded indebtedness	:	Net debt	: Net debt assignable : to the agency's area, : as of June 30, 1962	
			: Percent	: Amount
Los Angeles County	:	\$ 60,893,000	.0219	\$ 13,336
County Flood Control District	:	205,151,500	.0229	46,980
Antelope Valley Hospital District	:	440,000	1.9463	8,564
School Districts:				
Antelope Valley Joint Union High School	:	12,135,000	1.7946	217,775
Antelope Valley Junior College	:	0	1.7946	0
Keppel Union Elementary School	:	330,150	21.3485	<u>70,482</u>
Total debt	:			<u>\$357,137</u>

C. Summary of Full Faith and Credit Debt of the District and Other Political Entities

Year	Outstanding debt as of June 30, 1962			
	Net bonded debt	Net floating debt	Overlapping, etc., debt	Total debt
1958	\$35,000	\$48,000	\$247,981	\$330,981
1959	32,000	36,000	290,383	358,383
1960	29,000	24,000	369,547	422,547
1961	26,000	12,000	367,075	405,075
1962	23,000	0	357,137	380,137

D. Default Record. There has been no default in the payment of principal or interest during the past 20 years, either by the water district or by any overlapping, coterminous or underlying taxing district.

E. Assessed Valuations of Property in the Littlerock Creek Irrigation District

1. Valuation by Type of Property

Type of property	Valuation (\$000) ^{1/}				
	1958-59	1959-60	1960-61	1961-62	1962-63
Secured property	\$1,669	\$1,764	\$1,895	\$1,873	\$1,896
Unsecured property	374	414	425	489	592
Utilities	<u>140</u>	<u>135</u>	<u>113</u>	<u>126</u>	<u>140</u>
Total assessed value	<u>\$2,183</u>	<u>\$2,313</u>	<u>\$2,433</u>	<u>\$2,488</u>	<u>\$2,628</u>

^{1/} As assessed by Los Angeles County Assessor.

2. Estimated Market Value of Property in the District

1958-59	\$ 8,901,000
1959-60	9,577,000
1960-61	10,184,000
1961-62	9,931,000
1962-63	10,647,000

E. Assessed Valuations of Property in the Littlerock Creek Irrigation District (continued)

3. Assessment Ratio (percentage of market value): State Board of Equalization estimates of the District's assessment ratio are shown below. Note that these do not apply to public utilities, which are assessed at 50 percent of market value.

1958-59	23.7
1959-60	23.4
1960-61	23.3
1961-62	24.4
1962-63	24.0

4. Important Tax-Exempt Property Within the District. Of the total 11,300 acres of property within the District, 750 acres are owned by the District itself, an estimated 150 acres are owned by Los Angeles County, and an estimated 15 acres are owned by the Keppel Union Elementary School District. This tax-exempt property amounts to 915 acres or 8 percent of the District's area.
5. Concentrations of Valuable Property Just Outside the Area. United States Air Force Plant No. 42 is located about 8 miles northwest of the water agency, between the communities of Lancaster and Palmdale. The plant's facilities are owned by the Federal Government but are leased to several private aircraft companies. Although outside the District's area, these firms provide jobs to a considerable number of residents in the Littlerock Creek Irrigation District.

F. Tax Rates on Property in the Littlerock Creek Irrigation District

1. Components

Tax rate components :	Weighted average tax rates in dollars per \$100 assessed valuation ^{1/}				
	1958-59 :	1959-60 :	1960-61 :	1961-62 :	1962-63 :
County rate	\$1.97	\$2.09	\$2.06	\$2.06	\$2.08
School districts	3.75	3.74	3.73	4.23	4.28
L.A.C.F.C.D. ^{2/}	0.27	0.37	0.34	0.33	0.32
Special districts	0.82	1.01	0.98	0.93	1.00
L.C.I.D. ^{3/}	<u>0.46</u>	<u>0.44</u>	<u>0.42</u>	<u>0.41</u>	<u>0.58</u>
Total rate	<u>\$7.27</u>	<u>\$7.65</u>	<u>\$7.53</u>	<u>\$7.96</u>	<u>\$8.26</u>

^{1/} Assessed valuation as determined by County of Los Angeles.

^{2/} Los Angeles County Flood Control District.

^{3/} Littlerock Creek Irrigation District. The 1958-59 values were determined from total taxes levied by the District, in calendar year 1958, and so on for succeeding fiscal years. Figures shown are district taxes converted into equivalent rates assessed against total assessed valuation.

2. Assessment Roll. Assessments raised by the Littlerock Creek Irrigation District are levied and collected by officers of the District. They do not appear on the assessment roll of the County and are not included in the county tax bill. Taxes for other districts within the County and for general county purposes are levied on an assessment roll prepared by the County Assessor.

3. Legal Limits on Tax Rates (in dollars per \$100 assessed valuation)

- | | | |
|----------------------------------|--------|---|
| a. <u>Flood control district</u> | \$0.15 | Plus taxes for bonds and other special assignments. No limit for drainage improvements. |
| b. <u>Hospital district</u> | \$0.20 | Plus taxes for bonds and authorized special assignments. |
| c. <u>School districts</u> | \$2.00 | Through junior college. Increased rates may be allowed by California Education Code. |

F. Tax Rates on Property in the Littlerock Creek Irrigation District
(continued)

3. Legal Limits on Tax Rates (in dollars per \$100 assessed valuation)

d. Littlerock Creek Irrigation District

Bonds	No limit	Sufficient to pay interest and principal on district bonds which are due or will become due before the close of the next calendar year; or, sufficient to provide yearly payment required under plan to pay interest and principal on refunding bonds.
Other		Four percent of the assessed value of the land as determined by the District itself; to serve the following purposes:
	\$4.00	to pay for the annual operation and maintenance of the District;
	\$4.00	to pay for any other District purposes.

4. Taxes by Classification of Property. Taxes levied by Los Angeles County do not have a common tax base. Thus, the tax rate for the Flood Control District is levied only against land and improvements, whereas, tax rates for school districts and hospital districts are levied against all property valuations, i.e. land, improvements, and personal property. A separate tax is levied by the Littlerock Creek Irrigation District against all land valuations in the District, as assessed by the District's assessor. All lands are valued according to size at the rate of \$500 per acre (with a minimum valuation of \$500 for any parcel of land smaller than one acre). The entire area within the District is assessed at the rate of \$1.50 per year per \$100 assessed valuation (on the land only).

5. Division of Tax Rates into Separate Levies. Tax rates for the County and for the following special districts are classified into the components shown below.

- a. County tax rate: General fund, interest and sinking fund, exploitation and exposition.
- b. County flood control district: General fund, interest and sinking fund.
- c. Hospital districts: Maintenance funds, interest and sinking fund.
- d. School tax rates: General funds, bonds, junior college tuition, county school service.

G. Record of Levies and Estimated Collections of Property Taxes in the Littlerock Creek Irrigation District Area

1. Tax Collections

		Levies and estimated collections				
		by Los Angeles County				:Amount levied
Fiscal year	Amount	Estimated cash collections in	Estimated delinquencies at	Estimated by Littlerock Creek		
	levied	year of levy	end of fiscal year		Irrigation District ^{1/}	
		Amount	Percent	Amount	Percent	
1958-59	\$148,670	\$138,520	93.17	\$10,150	6.83	
					\$10,048	
1959-60	166,750	155,710	93.38	11,040	6.62	
					10,093	
1960-61	172,990	160,830	92.97	12,160	7.03	
					10,133	
1961-62	187,810	174,510	92.92	13,300	7.08	
					10,144	
1962-63	<u>201,860</u>	<u>189,080</u>	<u>93.67</u>	<u>12,780</u>	<u>6.33</u>	
					<u>15,224</u>	
Totals	<u>\$878,080</u>	<u>\$818,650</u>	<u>93.22</u>	<u>\$59,430</u>	<u>6.78</u>	
					<u>\$55,642</u>	

^{1/} Fiscal year 1958-59 was assumed to correspond to calendar year 1958, and so on.

G. Record of Levies and Estimated Collections of Property Taxes in the Littlerock Creek Irrigation District Area (continued)

2. When Taxes are Due

- a. Due dates: One-half of the taxes levied by the County are due on or before November 1; the remainder is due on or before February 1. One-half of the taxes levied by the District are due on or before December 20, and the remainder on or before June 20.
- b. When delinquent: The first and second half of county taxes become delinquent at 5 p.m. on December 10 and April 10 following their due dates. The first and second half of taxes levied by the District become delinquent immediately after their due dates.
- c. Penalties: The County adds a delinquency penalty of 6 percent to each tax installment that is delinquent. The District levies a delinquency penalty of 10 percent on the first tax installment and 5 percent on the second installment. No discounts are allowed for prompt payment and penalties are enforced.

3. Tax Sales. Tax sales of delinquent property are held regularly by the County and by the District.

4. Estimated Tax Delinquency. Each year, the County Tax Collector and the District's tax collector estimate a tax payment delinquency which is used for budget purposes and for computing necessary tax levies and rates for the ensuing year. District officials deduct 15 percent from their evaluation of land in the District to compensate for anticipated delinquencies. In Los Angeles County, the tax delinquency estimate is generally 5 percent of the total levy.

G. Record of Levies and Estimated Collections of Property Taxes in the Littlerock Creek Irrigation District Area (continued)

5. Collection of Taxes. Taxes levied for the Littlerock Creek

Irrigation District are levied and collected by officers of the District. All other property taxes are collected by the County Tax Collector.

H. Receipts and Disbursements of the Littlerock Creek Irrigation District

Income and expenses	:	Period beginning January 1, 1964
	:	and ending September 30, 1964

Balance, beginning of fiscal year \$1,341,713.16

Receipts

Land sales	30,750.00
Water sales	23,661.12
Prior year adjustment on notes receivable	19,479.84
Tax levies	4,018.17
Interest on notes and savings	3,335.86
Gain on foreclosure	2,134.79
Rent	100.00
Miscellaneous	<u>1,802.70</u>

Total receipts \$ 85,282.48

Total balance plus receipts \$1,426,995.64

Disbursements

Salaries	17,126.79
Cost of land sales	21,370.00
Operation and maintenance expense	12,606.24
Cost of power	9,978.89
Interest payments	<u>400.00</u>

Total disbursements \$ 61,481.92

Balance, end of fiscal year \$1,365,513.72

I. Sinking Fund Operations. There are no sinking funds being operated by the District at the present time.

J. Future Debt Service Requirements. Of the original 1936 bond issue for \$102,500, a balance of \$20,000 remained to be paid as of January 1, 1964. The last of these bonds, which mature serially and bear an annual interest of 4 percent, will be retired in 1968.

K. Economic Background

1. Land Area. At the end of 1963, the District encompassed about 11,300 acres.
2. Population. The following figures are estimates based upon voter registration:

<u>Year</u>	<u>Population</u>
1940	300
1950	500
1960	1,200
1964	1,300

3. Employment^{1/}

<u>Industry group</u>	<u>: Estimated number</u> <u>: employed April 1960</u>
Mining	0
Construction	39
Manufacturing	54
Transportation, communication, and utilities	22
Wholesale and retail trade	51
Services	86
Government	50
All other	<u>67</u>
Total	<u>369</u>

^{1/} Based on United States Census. Data shown are estimated jobs held by residents working both inside and outside the Littlerock Creek Irrigation District.

K. Economic Background (continued)

4. Agriculture. The Littlerock Creek Irrigation District area is one of the major producers of peaches and pears in Los Angeles County. Total agricultural production is valued at several million dollars annually.
5. Transportation. The nearest railroad service, the Southern Pacific Railroad through Palmdale, is 11 miles from Littlerock. Thirty miles north of Palmdale, the Southern Pacific connects with the Santa Fe system. A rail line from Palmdale to Colton, passing through Littlerock, is planned by the Southern Pacific Railroad. The nearest bus connection is the Greyhound Bus Lines depot in Palmdale. An airfield at Quartz Hill, 18 miles from Littlerock, is suitable for use by small private planes. State Highway 138 links Littlerock with San Bernardino on the east, and Palmdale on the west. Palmdale, in turn, is connected to Los Angeles by U. S. Highway 6.
6. Natural Resources. The largest rock, sand, and gravel quarry in the northern half of Los Angeles County is located within the District.

L. Financial Data for the Littlerock Creek Irrigation District^{1/}

1. General Data

a. Population

(1) 1950	500
(2) 1960	1,200
(3) 1962	1,250
(4) 1964	1,300

^{1/} Data in this section does not include assessments made, taxes levied, or bonded indebtedness incurred by the Littlerock Creek Irrigation District as a political entity.

L. Financial Data for the Littlerock Creek Irrigation District^{1/} (continued)

1. General Data

b. Assessed valuation (data not developed beyond 1962-63)

(1) Amount (1962-63)	\$ 2,628,440
(2) Basis of assessment	50.0 percent - utilities 24.0 percent - all other property
(3) Estimated full valuation	\$10,647,290

c. Overlapping bonded debt as of
June 30, 1962 \$ 357,137

d. Tax Collections (1962-63) \$ 189,080

2. Per Capita Data (based on 1962 population)

a. Assessed valuation (1962-63) \$ 2,103

b. Estimated full valuation (1962-63) \$ 8,518

c. Bonded debt (June 30, 1962) \$ 286

d. Tax collections (1963) \$ 151

3. Ratios

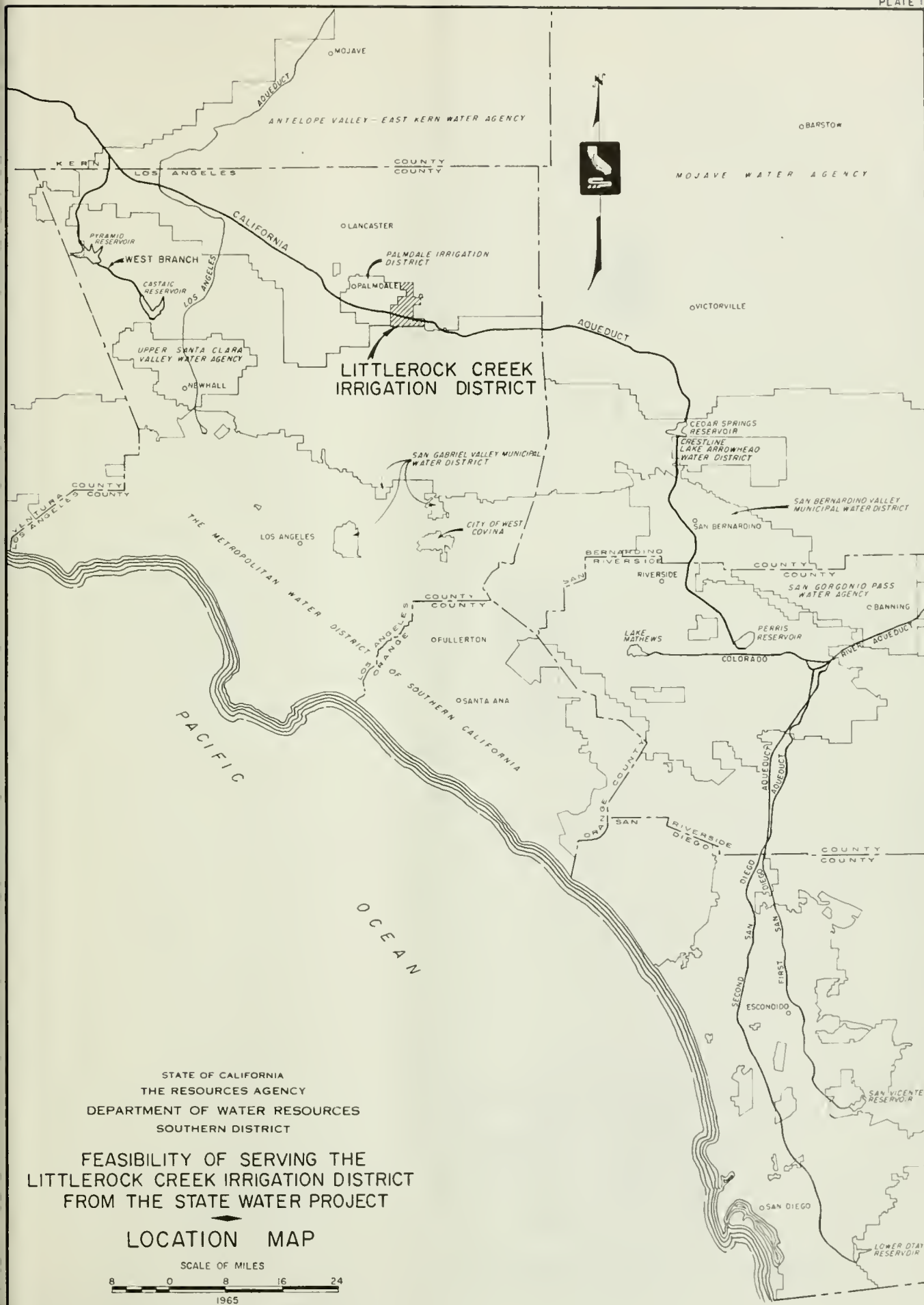
a. Overlapping bonded debt (June 30, 1962) as a percentage of:

(1) Assessed valuation (1962-63)	13.6%
(2) Estimated full valuation (1962-63)	3.4
(3) Tax collections (1962-63)	188.9

b. Percentage increase in:

(1) Population, 1950 to 1964	160.0%
(2) Assessed valuation 1958-59 to 1962-63	20.4
(3) Overlapping bonded debt, 1958 to 1962	44.0
(4) Tax collections, 1958-59 to 1962-63	36.5

^{1/} Data in this section does not include assessments made, taxes levied, or bonded indebtedness incurred by the Littlerock Creek Irrigation District as a political entity.





LEGEND



IRRIGATED AGRICULTURE



NONIRRIGATED AGRICULTURE



URBAN DEVELOPMENT



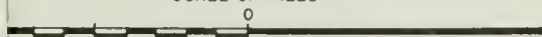
GRAVEL PITS

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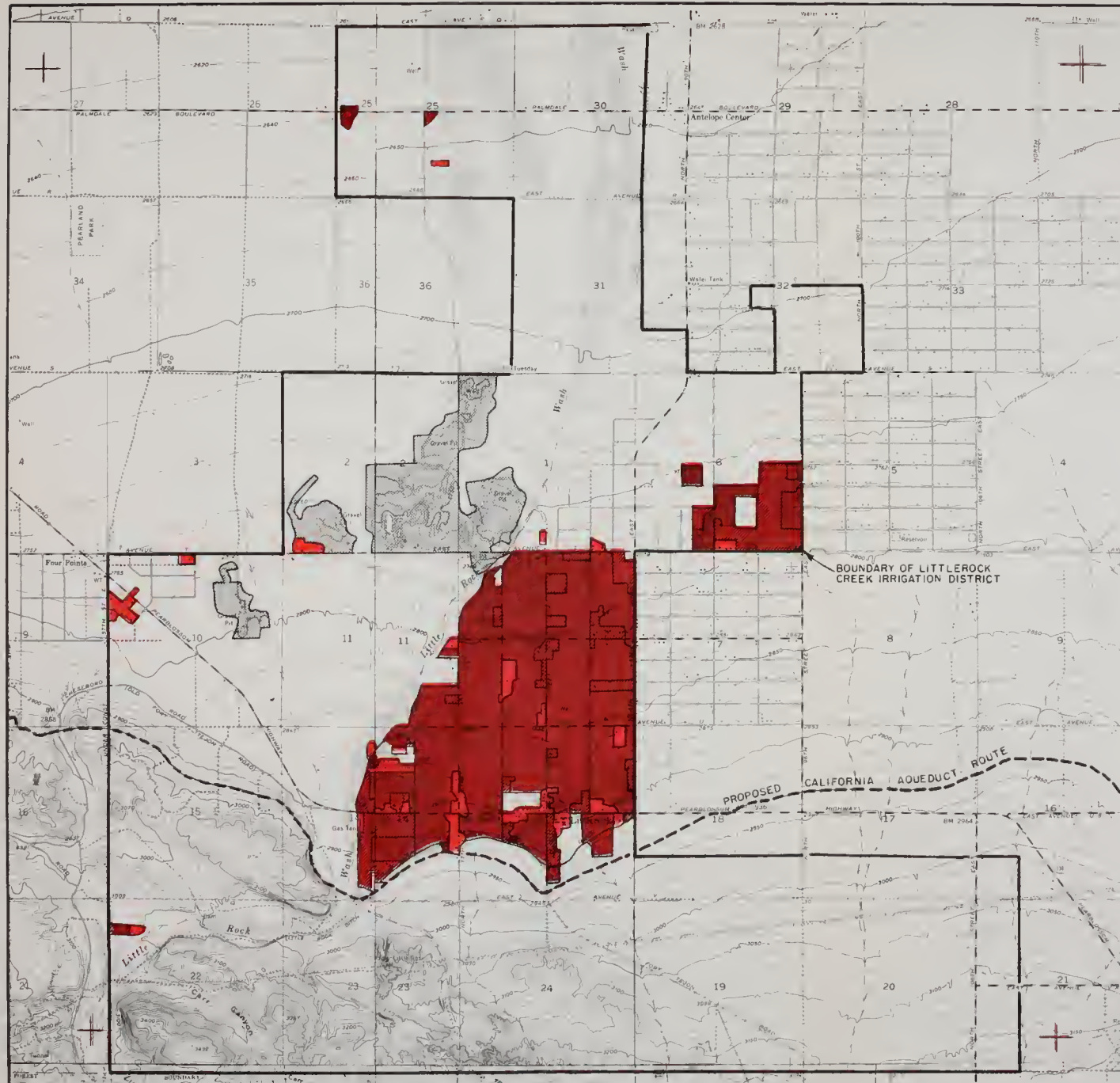
FEASIBILITY OF SERVING THE
LITTLEROCK CREEK IRRIGATION DISTRICT
FROM THE STATE WATER PROJECT

LAND USE IN 1961

SCALE OF MILES



1965



LEGEND

- IRRIGATED AGRICULTURE
- NONIRRIGATED AGRICULTURE
- URBAN DEVELOPMENT
- GRAVEL PITS

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
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